

Einladung zu einem Vortrag in der

AG STOCHASTIK

am Dienstag, 14.07.2026, um 15.45 Uhr.

Professor Donald Richards

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spricht über das Thema

Omnibus goodness-of-fit testing for distributions on Stiefel manifolds

This talk is based on joint research with Dominic Edelmann (Division of Biostatistics, German Cancer Research Center).

In this talk, we present a comprehensive framework for goodness-of-fit testing on Stiefel manifolds. Our approach is based on weighted integrals of the squared difference between the empirical and the population characteristic functions, yielding test statistics consistent against all fixed alternatives. In the case of the Fisher-Bingham distributions the test statistics are derived in explicit forms; Monte Carlo testing procedures are established for both simple and composite hypotheses; and simulation studies exhibit accurate Type I error control and strong power across a wide range of alternatives.

In testing for uniformity on hyperspheres, the classical Rayleigh test arises as a special case of our framework, and the complete asymptotic distributions of the test statistics are obtained, enabling computationally efficient asymptotic testing. The proposed methodology may be illustrated by an application to a well-known data set on the orbits of comets.

As the test statistics depends on the parameters of the chosen weight functions, we also consider the effects of such parametrizations on the distributions of the test statistics.

Ort: SR 2.058 (Geb. 20.30)

Die Dozentinnen und Dozenten der Stochastik